

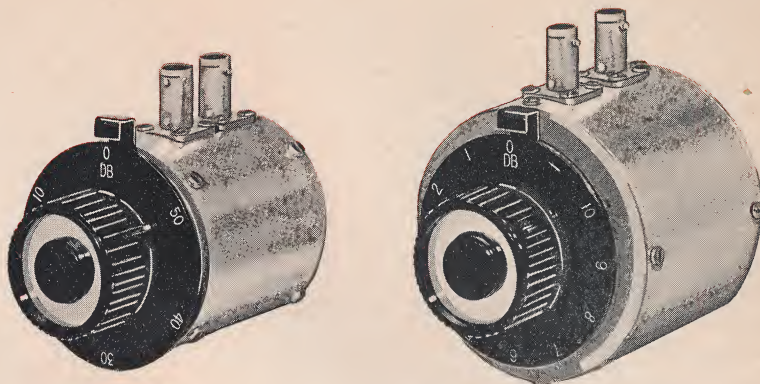
TURRET ATTENUATORS

50 & 75 OHM

0 - 1000 MCS.

TA-50 TE-50

■ The TA-50 is an accurate 0 to 50 db unit in 10 db steps and comes equipped with a dial, knob and indicator bracket. A similar unit, the TE-50, exhibits the same low VSWR and insertion loss as the TA-50 but accuracy specifications are slightly relaxed. While accuracies are not precise at higher frequencies, the repeatability is excellent.



MODELS TA-50 & TB-50

GENERAL SPECIFICATIONS

Model	TA-50	TE-50	TB-50	TC-50	TA-75	TB-75
ATTENUATOR STEPS..	0, 10, 20, 30, 40, 50, db	0, 10, 20, 30, 40, 50 db	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 db, Open	0, .1, .2, .3, .4, .5, .6, .7, .8, .9, 1 db, Open	0, 10, 20, 30, 40, 50 db	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 db, Open
IMPEDANCE.....	50 ohms	50 ohms	50 ohms	50 ohms	75 ohms	75 ohms
FREQUENCY RANGE...	DC to 900 mc (usable to 1250 mc)		DC to 900 mc (used to 1250 mc)		DC to 300 mc	DC to 300 mc
ACCURACY*.....	2% at 30 mc 3% at 400 mc 3% + 0.5 db at 900 mc	2% at 30 mc 5% at 400 mc ** 10% at 900 mc **	.2 db at 30 mc .3 db at 400 mc .5 db at 900 mc	.02 db at 30 mc .03 db at 400 mc .05 db at 900 mc	1% to 100 mc	.1 db to 100 mc
VSWR.....	1:1.25 at 900 mc	Typically 1:1.3 at 900 mc	1:1.3 at 900 mc	1:1.3 at 900 mc	0-100 mc 1.05:1 100-200 mc 1.08:1 200-300 mc 1.15:1	1.05:1 1.08:1 1.15:1
INSERTION LOSS (0 db Position)....	Less than .2 db	Less than .2 db	Less than .2 db	1 db + .2 db — .02 db	Less than 0.1 db	
POWER RATING.....	1 watt	1 watt	1 watt	2 watts	0.25 watts	0.25 watts
DIMENSIONS						
Dial Diameter.....	2½"	2½"	2½"	2½"	2½"	2½"
Case Diameter.....	2-11/32"	2-11/32"	3"	3"	2-11/32"	3"
Case Length.....	2-7/32"	2-7/32"	2½"	2½"	2-7/32"	2½"
WEIGHT.....	16 ounces	16 ounces	19½ ounces	19½ ounces	16 ounces	19 ounces
PRICE.....	95.00	65.00	95.00	95.00	95.00	95.00
* Maximum Difference Between Steps at 900 mc			1.5 db	0.15 db		
Minimum Difference Between Steps at 900 mc			0.5 db	0.05 db		

** Typical Accuracies

TB-50 TC-50

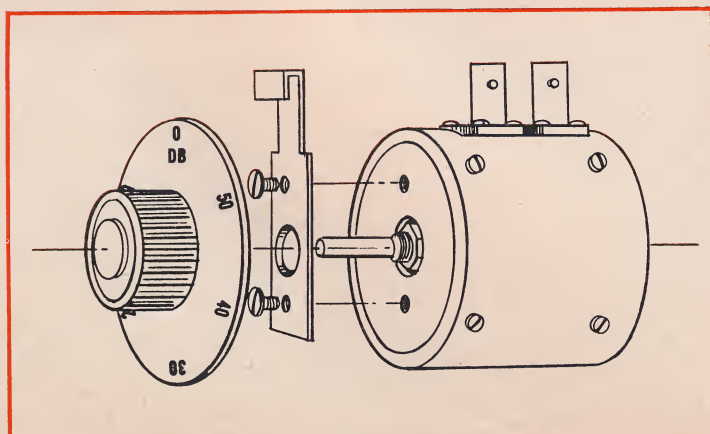
■ Both the TB and TC-50 Turret Attenuators use carbon film $\pm 1\%$ resistors in the individual pi pads.

The TB-50 provides 0 to 10 db attenuation in 1 db steps. The TC-50 furnishes 0 to 1 db in 0.1 db steps with 1 db fixed insertion loss. Dial, knob, and indicator brackets are included with each unit.

TA-75 TB-75

■ The TA-75 and TB-75 are 75-ohm turret attenuators, which are identical to the 50-ohm series, except that power and frequency range are reduced.

They are useful to 300 mc with excellent electrical specifications. Construction, repeatability and reliability are essentially the same as the time-proven 50-ohm series.



EXPLODED VIEW

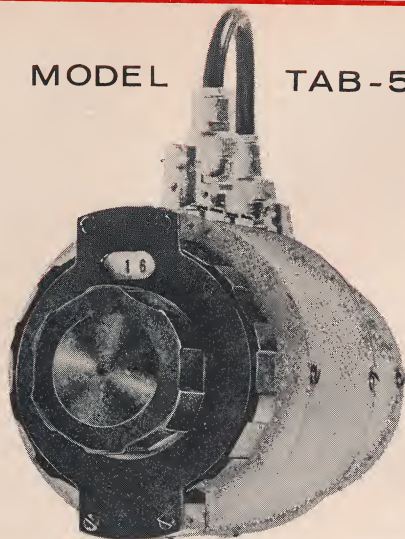
COMBINATION TURRET ATTENUATORS

MODEL TAB-50

0 - 1000 MCS.

Direct Readout Dial

TAB-50 and TEB-50



■ The TAB-50 consists of a TA-50 and TB-50 in a dual-concentric Dial and Knob arrangement, providing from 0 to 59 db in 1 db steps. Separate transparent dials are calibrated for each attenuator section, with the digits positioned for direct "window" readout. The unit is supplied with a jumper cable.

The Telonic TEB-50 is identical to the TAB, except that accuracy specifications have been relaxed at the higher frequencies. The TEB-50 keeps the accurate repeatability however.

SPECIFICATIONS

MODEL	TAB-50		TEB-50	TAD-50, TAD-50R		TAD-75A, TAD-75R	
ATTENUATION RANGE	0 to 59 db in 1 db steps through a dual Concentric Knob and Dial arrangement			0 to 110 db in 1 db steps			
ACCURACY	0-10 db			0-10 db		0-10 db	
	.15 db at 30Mc			.15 db at 30Mc		.1 db + 1%	
	.3 db at 400Mc		2%, +.2 db at 30Mc	.3 db at 400Mc			
	.5 db at 900Mc		5% typically at 400Mc	.5 db at 900Mc			
	11-59 db		10% typically at 900Mc	11-110 db		11-110 db	
	2%, +.15 db at 30Mc			3%, +.15 db at 30Mc		.4 db, +3% to 200Mc	
	3%, +.3 db at 400Mc			5%, +.3 db at 400Mc			
	5%, +.5 db at 900Mc			8%, +.5 db at 900Mc			
IMPEDANCE	50 ohms			50 ohms		75 ohms	
FREQUENCY RANGE	DC to 900Mc (useful to 1250Mc)			DC to 900Mc (useful to 1250Mc)		0-300Mc	
VSWR	1.2:1 to 300Mc			Less than 1.5:1 over the 0-900Mc Frequent Range		1.35:1 to 100Mc	
	1.35:1 to 900Mc						
INSERTION LOSS	Less than 0.1 db to 30Mc			.1 db to 30Mc		.2 db to 30Mc .6 db to 300Mc	
	Less than 0.2 db to 400Mc			.5 db to 400Mc			
	Less than 0.4 db to 900Mc			.7 db to 900Mc			
POWER RATING	1 Watt			1 Watt		¼ Watt	
PHYSICAL DIMENSIONS	CASE:	Diameter: 3"		CABINET RACK	Depth: 5¾"	Height: 4¾"	Length: 10"
		Length: 4¾"			Depth: 4"	Height: 5¼"	Length: 19"
WEIGHT	43 Ounces			WEIGHT	Cabinet 8 lbs. 10 ounces		
					Rack 8 lbs.		

TAD-50

■ The Telonic TAD-50 consists of two TA-50's and one TB-50 turrent attenuator, providing 0 to 110 db of attenuation in 1 db steps. Two models are available, the TAD-50 in a sloped front panel bench model and the TAD-50R in a standard 5 1/4" x 19" rack mount panel. Inter-connections are made with RG- 223/U double shielded co-axial cable to minimize leakage and allow the full 110 db of attenuation to be used.

Both units are available in 75 ohm versions for appli-

cation to 300 Mc. These are the TAD-75A and TAD-75R.

TAA-50 and TBB-50

■ The TAA and TBB-50 attenuators are tandem mounted TA- and TB-50 units with a common shaft. They are useful in attenuating two circuits simultaneously, such as the RF and IF inputs to field strength meters or other RF systems.

They may also be connected in Series to double the overall range of the individual units.



60 NORTH FIRST AVENUE • BEECH GROVE, INDIANA 46107

February 22, 1965

Systems Const.
Box 1546
Poughkeepsie, New York

Attn: T.H. Nelson,

Dear Mr. Nelson:

Thank you for your recent inquiry in regard to Telonic Attenuators. We are pleased to enclose information concerning these units.

Telonic turret attenuators feature a coaxial mechanism and arrangement by which RF characteristics remain constant throughout a frequency range of from DC to 1000 Mc. Models are available in steps of .1, 1, 10 and 50 db with characteristic impedance at either 50 or 75 ohms.

Telonic toggle-switch attenuators provide precisely known attenuation levels with negligible insertion loss over a wide frequency range. The sturdy low capacity molded phenolic switches function efficiently even in continuous production line use. Constant impedance resistive pi-pads, thrown in or out of the circuit, attenuate the input in independent steps. Each pad is also independently shielded to eliminate radiation, and the three 20 db pads are mounted in a separate compartment both shielded and physically isolated from the 42 db components. Two basic designs used are the 6 and 9 position units. The attenuators can be supplied in either 1/2 db steps or 1 db steps, 50 or 75 ohms.

If we can provide any additional information, please do not hesitate to contact this office or our representative in your area, who is listed below.

Very truly yours,

TELONIC INDUSTRIES, INC.

A handwritten signature in black ink, reading "Bob Shevlot".

Bob Shevlot
Sales Manager

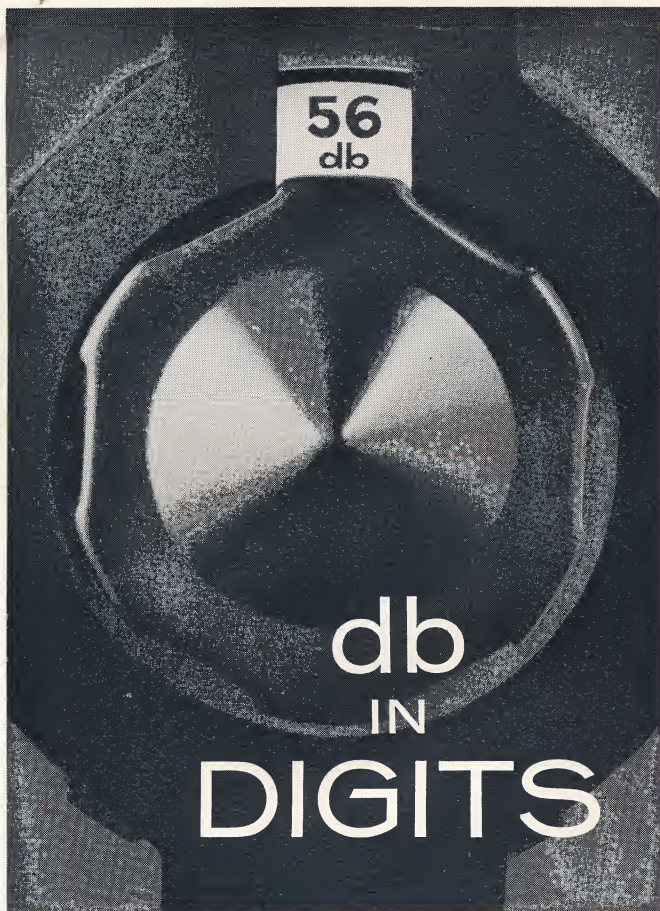
BS:pw
Encl. Attenuators

Our representative in your area is:

Tesco Associates
114 Miles Avenue
Syracuse, New York
PH: 315-474-3291

1-53-1





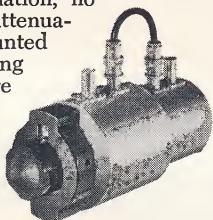
It attenuates any signal from DC to 1250 MC, has an operating range of 0 to 59 db, and provides error-free, digital indication of the db value. The Model No. is TAB-50. Its brand name is Telonic.

This turret attenuator is a unique Telonic design incorporating two concentric dial selectors with 10 db steps to 50 db, and 1 db steps to 10 db. Any db value from 1 to 59 can thus be selected and is indicated exactly by the digital readout. There is no approximation, no interpolation. Each decade and unit attenuation element is an individual pi-pad mounted to a precision machined rotor. Positioning is fast and exact, repetitive settings are always right on the mark.

Specifications are just as impressive: accuracy at 30 mc is $\pm 2\%$; VSWR to 300 MC is 1.2:1, and insertion loss is a low 0.1 db at 30 MC. And if extreme accuracy at high frequencies isn't mandatory, you may elect to use a Telonic Model TEB-50 identical to the TAB-50, but with relaxed specs above 30 MC — at a reduced price of course.

Both of these models are shipped ready for either bench use or panel mounting. Instructions and drilling template are furnished with each unit.

Telonic has, in fact, a wide selection of turret attenuators available for virtually any application. They range from 0 to 1 db in 0.1 db steps to 0 to 110 db in multiple mounts. A complete set of specification sheets on all models is available on request.



INDUSTRIES, INC.

60 NORTH FIRST AVENUE
BEECH GROVE, IND.
PHONE STATE 7-3231 AREA CODE 317
TWX 317-635 4748

*Representatives in
Baltimore, Boston, Chicago, Cleveland, Dallas, Dayton, Denver, Huntsville, Indianapolis, Los Angeles, New York City, Orlando, Philadelphia, San Francisco, Seattle, St. Louis, Syracuse and principal cities throughout the world.*

Telonic[★]

for

attenuators



ATTENUATORS

TURRET AND TOGGLE SWITCH

GENERAL INFORMATION

Model	Type	Attenuation Range	Impedance	Freq. Range	Price*
TC-50	Turret	0-1 db in 0.1 db steps	50 ohm	DC-1000MC	\$ 95.00
TB-50	Turret	0-10 db in 1 db steps	50 ohm	DC-1000MC	\$ 95.00
TA-50	Turret	0-50 db in 10 db steps	50 ohm	DC-1000MC	\$ 95.00
TE-50	Turret	0-50 db in 10 db steps	50 ohm	DC-1000MC	65.00
TB-75	Turret	0-10 db in 1 db steps	75 ohm	DC-300MC	95.00
TA-75	Turret	0-50 db in 10 db steps	75 ohm	DC-300MC	95.00
TAB-50	Dual Turret	0-59 db in 1 db steps	50 ohm	DC-1000MC	250.00
TEB-50	Dual Turret	0-59 db in 1 db steps	50 ohm	DC-1000MC	210.00
TAD-50	Combination Turret	0-110 db in 1 db steps	50 ohm	DC-1000MC	365.00
TAD-75	Combination Turret	0-110 db in 1 db steps	75 ohm	DC-300MC	365.00
TAA-50	Dual Turret	0-50, 0-50, in 10 db steps	50 ohm	DC-1000MC	200.00
TBB-50	Dual Turret	0-10, 0-10, in 1 db steps	50 ohm	DC-1000MC	200.00
TG-600 Series.....	Toggle	0-42 db in 1 db steps	50-75 ohm	DC-300MC	65.00
TG-900 Series.....	Toggle	0-102 db in 1 db or .5 steps			85.00

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Telonic

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BEECH GROVE, INDIANA

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TOGGLE SWITCH ATTENUATORS

0-250 MC

Negligible Insertion Loss

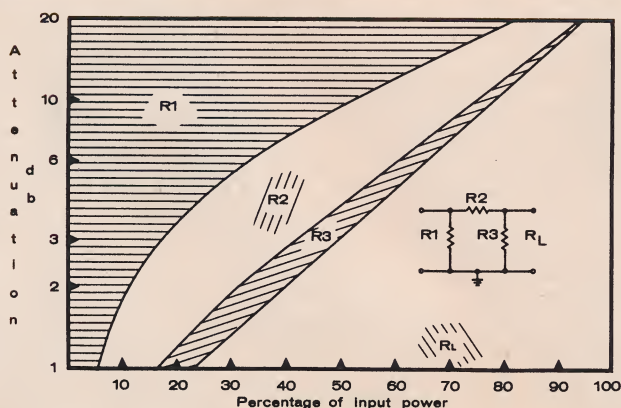
Accurate Attenuation



MODEL TG-9050

SPECIFICATIONS

MODEL	TG-650	TG-675	TG-950	TG-975	TG-9050	TG-9075
ATTENUATION RANGE	0-42 db in 1 db steps		0-102 db in 1 db steps		0-82.5 db in 0.5 db steps	
ATTENUATION STEPS	1, 2, 3, 6, 10 and 20 db		1, 2, 3, 6, 10, 20, 20, 20, & 20 db		0.5, 1, 2, 3, 6, 10, 20, 20, 20 db	
IMPEDANCE	50 ohms	75 ohms	50 ohms	75 ohms	50 ohms	75 ohms
FREQUENCY RANGE	0-250Mc		0-250Mc		0-250Mc	
ACCURACY at 30 Mc	±0.3 db max. total error		±1.5 db max. total error		±1.0 db max. total error	
ACCURACY at 200 Mc	±0.6 db max. total error		±1.5 db max. total error	±3 db max. total error	±1 db max. total error	±2 db max. total error
INSERTION LOSS	0.5 db per 100Mc		0.8 db per 100Mc		0.8 db per 100Mc	
VSWR	0-100Mc 1.2 to 1		0-100Mc 1.5 to 1		0-100Mc 1.2 to 1	
POWER RATING	½ Watt					½ Watt
CONNECTORS	"BNC" Jacks					"BNC" Jacks
DIMENSIONS	1 7/8" x 1 7/8" x 5 1/8"		1 7/8" x 1 7/8" x 7 3/8"		1 7/8" x 1 7/8" x 7 3/8"	
WEIGHT	2 lbs.		2 1/2 lbs.		2 1/2 lbs.	
FEDERAL STOCK NUMBER			6625-077-2995			



■ Telonic Toggle Switch Attenuators are usable to 300 Mc. Heavy duty toggle switches are used for exceptionally long life. The switch controls are double knife edge and the self wiping action assures excellent repeatability.

The pads are individually shielded to prevent leakage

and allow the maximum attenuation to be used. A double shielded box further prevents leakage.

The attenuators are available with attenuation steps of 0.5, 1.0, 2.0, 3.0, 6.0, 10 and 20 db. Six-step units of 0 to 42 db in 1 db steps and 9-position units of either 0 to 102 db in 1 db steps or 0 to 82.5 db in 0.5 db steps are currently available from stock.

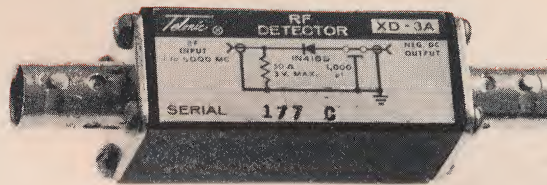
They can be furnished in 50 or 75-ohm characteristic impedance.

For frequencies above 300 Mc the line length of toggle switch attenuators results in increased VSWR. For high frequency applications we recommend Telonic turret attenuators as described on the preceding pages.

NOTE: RG-55B/U double shielded coaxial cable is recommended for use with 50-ohm attenuators since RG-58 is more susceptible to leakage which would result in erroneous measurements at the high attenuation levels available with these models.

RF DETECTORS AND

■ Telonic RF Detectors provide the accuracy required to utilize intelligibly the flat output of today's precision sweep and signal generators. The electrical requirements for low VSWR are met without sacrifice of mechanical size. TELONIC offers detectors with most standard input impedances and input connectors. Output jacks are "BNC" unless otherwise specified. Units with other impedances, connectors, and frequency ranges can be furnished on request.

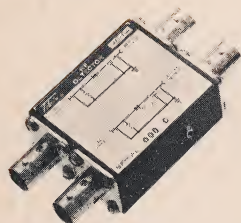


XD-3, XD-4A, XD-23

■ The XD-3 detector is designed for efficient operation in the video, VHF, and UHF ranges. The XD-4A is suitable for application through the VHF range. Efficiency is approximately 75% for 1 volt RMS input. The XD-23 covers the 500 kc to 3000 Mc Band.

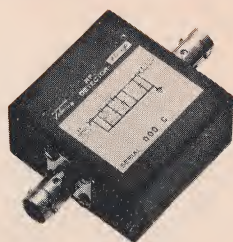
DETECTOR SPECIFICATIONS

MODEL	XD-3A, C, E†	XD-4A	XD-6A	XD-8A	XD-9A	XD-23A, C, E†
INPUT IMPEDANCE	50 ohms	75 ohms	50 ohms	50 ohms	75 ohms	50 ohms
FREQUENCY RANGE	0.1-1000 Mc	0.1-300 Mc	0.1-1000 Mc	0.5-300 Mc	0.5-300 Mc	500 kc-3000 Mc
VSWR	Less than 1.2:1					Less than 1.5:1
MAXIMUM INPUT VOLTAGE	3V r.m.s.	3V r.m.s.	3V r.m.s.	3V r.m.s.	3V r.m.s.	5V r.m.s.
TYPE OF DETECTION	Half-wave	Half-wave	Half-wave	Half-wave Voltage Doubler		Half-wave
OUTPUT POLARITY	Negative		Negative and Positive	Positive	Positive	Negative
CONNECTORS						
Input	BNC, TNC, N†	BNC	BNC	BNC	BNC	BNC, TNC, N†
Output	"BNC"	"BNC"	"BNC"	"BNC"	"BNC"	"BNC"
CASE DIMENSIONS	1 3/4" x 3/4" x 3/4"	2" x 1 7/8" x 1"	1 3/4" x 1 1/2" x 3/4"	2" x 1 7/8" x 1"	2" x 1 7/8" x 1"	2" x 1 7/8" x 1"
WEIGHT	2 oz.	4 oz.	4 oz.	4 oz.	4 oz.	4 oz.
FEDERAL STOCK NUMBER	6625-876-3106*		6625-991-3856	6625-820-5300		
* XD-3A only						
† To specify input connector for XD-3 and XD-23, add "A," "C," or "E" to model number for type BNC, TNC, or N respectively.						



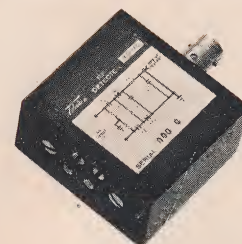
XD-6A

■ The XD-6A effectively contains two XD-3s in one housing. The additional section has a reversed diode, giving a choice between negative or positive output polarity. Harmonic distortion in the input may be analyzed by noting the differences in amplitude between the two envelopes.



XD-8A and XD-9A

■ The XD-8A and XD-9A detect the full envelope of the input wave form. Peak to peak detection doubles the DC output and cancels harmonic distortion effects. These detectors are useful over the entire VHF range.



XD-10

■ This 300-ohm detector, of particular interest to the TV industry, has a termination balanced to ground. Since the entire envelope is detected, non-symmetry and other wave-form distortion errors are minimized for greater accuracy. Specifications are similar to XD-9A.